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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,482	01/26/2005	Min-soo Jung	LNK-0099	3842

23413 7590 09/07/2007

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EXAMINER	
TAYONG, HELENE E	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
09/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

H·A

Office Action Summary	Application No.	Applicant(s)	
	10/522,482	JUNG, MIN-SOO	
	Examiner	Art Unit	
	Helene Tayong	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/26/07,10/4/04 and 2/12/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 5-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Do et al (US 6928048) in view of Admitted prior art Fig. 1.

(1) with regards to claims 1, 5, 7 and 10;

Do et al in Fig.2 discloses an apparatus (abstract line 1) for performing an initial symbol synchronization and detection operation in an OFDM (Orthogonal Frequency Division Multiplexing) receiver, the OFDM receiver including a correlator for making a correlation between a currently received signal and a previously received signal and outputting a result of the correlation, a sliding integrator for accumulating output signals of the correlator during a set guard interval and outputting a result of the accumulation, and a symbol integrator for accumulating output signals of the sliding integrator and outputting a result of the accumulation, said apparatus comprising:

a maximum-value position detector (320) for outputting a count value currently counted by an internal counter as information associated with maximum-value position detection in response to the maximum-value detection signal (col. 3, lines 40-51); and

a guard-interval-mode discrimination unit (330 and 340) for periodically comparing the count value outputted from the maximum-value position detector (320) and a previous count value, producing a difference value between maximum-value positions, accumulating difference values during a predetermined time, producing an average value of the difference values, comparing the average value with a predetermined guard-interval discrimination parameter, and discriminating a guard interval mode and an FFT (Fast Fourier Transform) mode according to a result of the comparison (col. 4, lines 8-59).

Do et al discloses all of the subject matter discussed above, but for specifically teaching a maximum-value detector for outputting a maximum-value detection signal when detecting a maximum value of accumulated correlation values from one of the

integrators, and for selectively outputting a maximum value of accumulated correlation values from the other integrator;

However, the admitted art (fig. 1) discloses a maximum-value detector (106a-106d) for outputting a maximum-value detection signal when detecting a maximum value of accumulated correlation values from one of the integrators, and for selectively outputting a maximum value of accumulated correlation values from the other integrator (pg.1, [0009]-[0010]);

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the device of the admitted art to the apparatus of Do et al in order to detect the length of a guard interval, whereby accurate FFT window recovery is performed by automatically searching for the length of the guard interval by calculating the difference between symbol start points in time in an OFDM receiver. The motivation to combine the device of the admitted art in the apparatus of Do et al would be to eliminate multi-channel path distortion.

(2) with regards to claim 2;

Do et al further discloses a counting period/length controller (360) for adjusting a counting period of the maximum value position detector and data lengths associated with the correlator and the integrators in response to the discriminated FFT mode and guard interval mode (col. 4, lines 60-65); and

a useful-symbol start-point detector (340) for adding a value of discriminated guard interval length to the count value outputted from the maximum-value position

detector so that a start point of a useful symbol is detected (col. 4, lines 65-67 and col. 8, lines 1-2).

(3) with regards to claims 3 and 11;

Do et al further discloses all of the subject matter discussed above, but for specifically teaching wherein data lengths associated with the correlator and the sliding integrator are set so that the correlator and the sliding integrator correspond to length of 2048 samples and length of 64 samples in an initial guard-interval discrimination mode, respectively, and

However, the admitted art (fig. 1) discloses wherein data lengths associated with the correlator (100) and the sliding integrator (102a-102d) are set so that the correlator and the sliding integrator correspond to length of 2048 samples and length of 64 samples in an initial guard-interval discrimination mode, respectively (pg.3, [0003]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to select N to be any number such as 2048 samples and length of 64 samples since not define, of the admitted art to incorporate to the apparatus of Do et al in order to detect the length of a guard interval, whereby accurate FFT window recovery is performed by automatically searching for the length of the guard interval by calculating the difference between symbol start points in time in an OFDM receiver. The motivation to combine the method of the admitted art in the apparatus of Do et al would be to determine the start point of a useful symbol so that the receiver can carry out an FFT operation.

Do et al further discloses wherein a counting period of the internal counter of the maximum-value position detector is set so that the internal counter of the maximum-value position detector periodically carries out a counting operation every 2048 samples (fig. 3, col.3, lines 22-28).

(4) with regards to claim 6;

Do et al further discloses a useful-symbol start-point detector for adding a value of discriminated guard interval length to a count value outputted from a maximum-value position detector so that a start point of a useful symbol is detected (col. 4, lines 65-67 and col. 8, lines 1-2).

(5) with regards to claim 8;

Do et al further discloses variably setting the counting period according to the discriminated guard interval mode (col. 3, lines 45-66).

(6) with regards to claims 9 and 13;

Do et al further discloses wherein the observation guard interval path is a path of a guard interval corresponding to [fraction (1/32)] of the useful data duration (fig. 3, col. 3, lines 22-28 and col. 4, lines 34-37).

Allowable Subject Matter

5. Claims 4 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach wherein the maximum-value detector allows a

maximum-value position to be detected on the basis of a pre-arriving path in a form of accumulated correlation values for an SFN (Single Frequency Network).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Moose (US 20020065047 A1) discloses a method and system for properly tracking, synchronizing and demodulating received packets at a receiver in order to decode data and other information symbols transmitted by a transmitter..

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Tayong whose telephone number is 571-270-1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Helene Tayong

8/28/07

SHUWANG LIU
SUPERVISORY PATENT EXAMINER